

Appl. No. 10/749,243
Amdt. dated July 13, 2005
Reply to Office Action dated February 14, 2005

PATENT

REMARKS:

This communication is in response to the office action dated February 14, 2005, wherein the Examiner rejected claims 1 and 2. Claim 3 and 4 were allowed. Claims 1 and 2 were rejected as being anticipated by Japanese Patent Number 410129523 (hereafter Hashimoto). In this amendment, new claims 5-11 are added, wherein new independent claim 10 corresponds to allowed claim 3 rewritten in independent form as suggested by the examiner. The limitations of the new claims are supported by the specification and drawings. No new matter is added.

The rejection of claims 1 and 2 is respectfully traversed. The structure identified by the Examiner in Hashimoto does not correspond to the claimed structure. (Enclosed is a translation of the detailed description of Hashimoto obtained from the JPO website.) Hashimoto is, in fact, representative of the very prior art over which the present invention is an improvement. This structure clearly does not include the claimed reinforcing member of the present invention. For ease of reference, enclosed herewith is a marked up copy of Fig. 1 from Hashimoto, in which Applicant has indicated, with a dashed line identified as "A," the location where the claimed reinforcing member would have to be if Hashimoto were to anticipate the claimed invention.

As described in Hashimoto, part 5, which the Examiner mistakenly refers a reinforcing member, is in fact the strut housing. Also, the "front apron inner part" of Hashimoto is not part 4 alone, but corresponds to a combination of parts 2 and 4. Part 6 above strut housing 5 is a support. The corresponding strut housing and support in the structure that would be utilized with the present invention is actually shown in Fig. 1 of the instant application. For ease of reference, applicant submits herewith a marked up copy of Fig. 1 of the instant application wherein the corresponding strut housing and support is circled and marked with the letter "B". The strut housing and support are not discussed in the instant application because they are not directly part of the claimed invention.

The reinforcing member as shown and described in the instant invention is a specific structure that performs the specific structural purpose of reinforcing the front-side part structure by creating a closed section (CS). Strut housing 5 in Hashimoto is not such a

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reinforcing member and would not be understood by a person skilled in the art to be such a reinforcing member. Strut housing 5 merely covers the strut location, with brackets 9 having closed sections to provide the structural support for the support 6. Hashimoto thus does not show the claimed reinforcing member. Claim 1, and claim 2 dependent thereon, are therefore patentable over the cited reference.


New independent claim 6, as well as new dependent claim 5, each further recite that the reinforcing member is disposed laterally outward from the fender apron inner panel. This limitation is also not shown in Hashimoto wherein the strut housing 5 referenced by the Examiner is actually laterally inward with respect to the fender apron inner panel as identified. Moreover, new dependent claims 7-9 recite further structural features of the reinforcing member not shown in Hashimoto. Thus, claims 5-9 are also patentable over the cited reference.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Should the Examiner have any continuing objections or concerns, the Examiner is respectfully asked to contact the undersigned at 415-442-1106 in order to expedite allowance of this case. Authorization is granted to charge any outstanding fees due at this time for the continued prosecution of this matter to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (matter no. 060945-0148).

Respectfully submitted,

Date July 14, 2005


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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the suspension upper arm supporting structure of an automobile.

[0002]

[Description of the Prior Art] the suspension upper arm in the front suspension of an automobile -- a tip -- two forks -- it is a configuration and is supported by the general section of the arm bracket with which the both ends were prepared before and after strut housing (refer to JP,4-189683,A as a similar technique).

[0003] Since the both ends of a suspension upper arm are attached and supported from a cross direction outside to an arm bracket, the general section by which a suspension upper arm is supported at least must be an open-section configuration on the cross direction outside. Moreover, contrary to it, the lower limit section of an arm bracket serves as an open-section configuration to the cross direction inside that it is attached in strut housing or a frontside member, and a closed section should be formed.

[0004]

[Problem(s) to be Solved by the Invention] However, in the general section in which the cross-section configuration of an arm bracket supports a suspension upper arm, if it is in such a Prior art, since it is open to the cross direction outside and open to the cross direction inside in the lower limit section, rigidity falls in the cutback part. Therefore, in order to compensate the reduction of rigidity in the cutback part, it will be necessary to raise the board thickness of the whole arm bracket, and car-body weight increase will be caused.

[0005] Moreover, that the direction of an aperture of a cross section changes by the upper and lower sides in the arm bracket of order, respectively acquires the geometry precision of a suspension upper arm upwards, and it is disadvantageous and requires time amount for geometry adjustment.

[0006] It is made paying attention to such a Prior art, and the direction of an aperture of the cross section of an arm bracket does not change on the way, but this invention offers the suspension upper arm supporting structure which geometry precision tends to obtain.

[0007]

[Means for Solving the Problem] This invention combines the lower limit section of strut housing with a frontside member. While attaching an arm bracket in this strut housing order edge along the vertical direction from a cross direction outside and combining the lower limit section of this arm bracket with a frontside member It is the suspension upper arm supporting structure which supported the both ends of a suspension upper arm in the general section of an arm bracket. Said arm bracket is made into an open-section hat configuration to a cross direction outside covering the vertical direction, and the lower limit section is turned to the bottom and it is made a breadth configuration at last.

[0008] According to this invention, the arm bracket is carrying out the open-section hat configuration to the cross direction outside covering the vertical direction, and can support a suspension upper arm in every part. And since there is no cutback which changes the direction of an aperture into a cross section

in the middle of an arm bracket, it is easy to acquire rigidity. Even if it combines the lower limit section of an arm bracket with a frontside member, a closed section is not obtained, but since the lower limit section is carrying out the breadth configuration at last and is combined with the frontside member of the high rigidity in a large area, rigidity equivalent to the case where a closed section is formed is acquired.

[0009] Moreover, torsion of an arm bracket is prevented, and combining the lower limit section of an arm bracket with a frontside member in a large area in this way acquires geometry precision upwards, and it is advantageous.

[0010] If each arm bracket (especially lower limit section) is respectively closed-section-ized with a connection bracket, the rigidity of an arm bracket will improve further. A pipe may be supported using a connection bracket.

[0011]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained based on drawing 1 - drawing 6. A is a cross direction outside among drawing, and B is the cross direction inside.

[0012] Drawing 1 shows the structure on the right-hand side of the engine room of an automobile. 1 is a frontside member and is allotted to the cross direction. The lower limit section of the hood ridge panel 2 is combined with the frontside member 1. This hood ridge panel 2 is outline cross-section L form-like, and the hood ridge lane force 3 of the closed section which joined the member to two sheets is allotted to that upper part along with the cross direction.

[0013] The foil house inner 4 is formed in the hood ridge panel 2, and the strut housing 5 is formed in this foil house inner 4. The support 6 for responding to the pressure-from-below input of a suspension is attached in the upper part of the strut housing 5. Moreover, the heights 7 of the configuration which curved up and down are formed in the strut housing 5 order edge. Furthermore, the hole 8 is also formed in the center of the strut housing 5.

[0014] 9 is carrying out the open-section hat configuration to the cross direction outside with the arm bracket covering the vertical direction, and although formed by the usual width of face, the general section 10 is a breadth configuration after turning the lower limit section 11 to the bottom. The heights 7 in the aforementioned strut housing 5 are carrying out the configuration which ****ed in the general section 10 of this arm bracket 9. Therefore, the general section 10 is combined with heights 7 from a cross direction outside, and, as for this arm bracket 9, the lower limit section 11 is combined with the frontside member 1. The support hole 12 penetrated forward and backward is formed in the upper part of the general section 10, and the support hole 13 also corresponding to the side face of heights 7 is formed in it.

[0015] As the lower limit section 11 of the arm bracket 9 is shown in drawing 3 and drawing 6, the direction of side-face 11a which approached mutually is formed for a long time than side-face 11b which has deserted. And the connection bracket 14 which has predetermined vertical width of face is attached in the lower limit section 11 before and behind this from the cross direction outside, where a cross direction is met. By attaching this connection bracket 14, each lower limit section 11 serves as a closed section.

[0016] Moreover, the both ends 15 of the connection bracket 14 also **** in the difference in the die length of the side faces 11a and 11b of the lower limit section 11, and are bent in the shape of a crank. By making ups-and-downs section 15a (referring to drawing 6) of the connection bracket 14 engage with side-face 11a of each lower limit section 11, this is for preventing the breadth to this lower limit section 11 order. Furthermore, the toe of bead 16 is formed in the connection bracket 14 along with the longitudinal direction, and the rigidity of this connection bracket 14 is raised.

[0017] Ups-and-downs formation of the piece 17 of attachment towards a cross direction outside has been carried out in one at the part in the middle of this connection bracket 14, and the brake fluid hose 18 inserted in this piece 17 of attachment from the hole 8 of the strut housing 5 is supported. The brake fluid hose 18 is connected to the brake hose 19 in this piece 17 of attachment, and that connection is being fixed with a clip 20.

[0018] And the both ends 22 of the suspension upper arm 21 are supported in the upper part of the arm bracket 9 which carried out in this way and was attached. Support of the suspension upper arm 21 is performed by bolt nut means 23 to penetrate the support holes 12 and 13 formed in the upper part and heights 7 of the arm bracket 9.

[0019] According to this example, the arm bracket 9 is carrying out the open-section hat configuration to the cross direction outside covering the vertical direction, and since there is no cutback which changes the direction of an aperture into a cross section on the way, rigidity is high. Therefore, it is not necessary to raise the board thickness of the arm bracket 9, and weight mitigation can be aimed at. Moreover, since the lower limit section 11 of the arm bracket 9 is carrying out the breadth configuration at last and is combined with the frontside member 1 of the high rigidity in a large area, rigidity improves also in this point. Furthermore, with the connection bracket 14, since each lower limit section 11 is closed-section-ized, rigidity improves further.

[0020] In addition, torsion of the arm bracket 9 is prevented, and combining the lower limit section 11 of the arm bracket 9 with the frontside member 1 in a large area acquires the geometry precision of a suspension upwards, and it is advantageous.

[0021]

[Effect of the Invention] According to this invention, the arm bracket is carrying out the open-section hat configuration to the cross direction outside covering the vertical direction, and can support a suspension upper arm in every part. And since there is no cutback which changes the direction of an aperture into a cross section in the middle of an arm bracket, it is easy to acquire rigidity.

[0022] Moreover, torsion of an arm bracket is prevented, and combining the lower limit section of an arm bracket with a frontside member in a large area in this way acquires geometry precision upwards, and it is advantageous.

[0023] If each arm bracket (especially lower limit section) is respectively closed-section-ized with a connection bracket, the rigidity of an arm bracket will improve further. A pipe may be supported using a connection bracket.

[Translation done.]

